

## CLAIMS

1. A printer for printing a second interface onto a second surface, in response to first indicating data received from a sensing device, the first indicating data being sensed by the sensing device from first coded data, a first interface disposed on a first surface including the first coded data, the printer including:

(a) an input module configured to:

- (i) receive, from the sensing device, the first indicating data, the first indicating data being at least partially indicative of response data;
- 10 (ii) generate second indicating data based on the first indicating data, the second indicating data being at least partially indicative of the response data;
- (iii) send the second indicating data to a computer system; and

(b) a printing module, including a printing mechanism, configured to:

- 15 (i) receive the response data from the computer system;
- (ii) generate the second interface based at least partially on the response data; and
- (iii) print the second interface onto the second surface using the printing mechanism.

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2. A printer according to claim 1, the second interface including second coded data, wherein the printing module includes a coded data generator configured to generate the second coded data based on at least part of the response data.

25 3. A printer according to claim 2, the response data including second region identity data indicative of at least one identity, the identity being associated with a region of the second interface, the coded data generator being configured to generate the second coded

data based on the second region identity data, the second coded data being indicative of the identity.

4. A printer according to any one of the preceding claims, wherein the second  
5 interface includes visible information in addition to the second coded data, the visible information being based at least partially on the response data.

5. A printer according to claim 3, wherein the second coded data is also indicative of at least one reference point of the region.

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6. A printer according to claim 5, wherein the at least one reference point is determined on the basis of a coded data layout.

7. A printer according to claim 6, wherein the printing module is configured to  
15 receive the coded data layout from the computer system.

8. A printer according to claim 6, further including storage means for storing a plurality of the coded data layouts, the printing module being configured to:

receive, from the computer system, layout selection information indicative of one of the  
20 coded data layouts; and

use the layout selection information to select one of the stored coded layouts for use in determining the at least one reference point.

9. A printer according to claim 1, wherein the first indicating data includes location  
25 data sensed by the sensing device from the first coded data.

10. A printer according to claim 1, wherein the first indicating data includes first

region identity data sensed by the sensing device from the first coded data, the first region identity data being indicative of an identity associated with a region of the first interface, the region being at least partially indicative of the response data.

5 11. A printer according to claim 10, wherein the first indicating data includes location data sensed by the sensing device from the first coded data, the location data being indicative of a location within the region, the location within the region being at least partially indicative of the response data.

10 12. A printer according to any one of claims 1 to 3 or 5 to 11, wherein the second coded data includes at least one tag, each tag being indicative of the identity of the region.

13. A printer according to claim 12, wherein the second coded data includes a  
15 plurality of the tags, the coded data generator being configured to ascertain a position of each tag prior to printing, the respective positions being determined on the basis of a coded data layout.

14. A printer according to claim 13, wherein the coded data generator is configured  
20 to receive the coded data layout from the computer device prior to printing the second coded data.

15. A printer according to claim 7, further including storage means for storing a plurality of the coded data layouts, the coded data generator being configured to:  
25 receive, from the computer device, layout selection information indicative of one of the coded data layouts; and  
generate the second coded data based on the layout selection information.

16. A printer according to claim 13, wherein each of the tags includes:  
first identity data defining a relative position of that tag; and  
second identity data identifying the surface.
- 5 17. A printer according to any one of claims 1 to 3 or 5 to 11, the printer being  
configured to print the second interface onto the second surface on demand.
18. A printer according to any one of claims 1 to 3 or 5 to 11, wherein the second  
interface is printed over a plurality of the pages.
- 10 19. A printer according to claim 1, wherein the first and/or second surfaces are  
defined by a substrate.
20. A printer according to claim 19, wherein the substrate is laminar.
- 15 21. A printer according to claim 12, wherein the tags are disposed at predetermined  
positions on the second surface.
22. A printer according to claim 21, wherein the tags are disposed on the surface  
20 within a tessellated pattern comprising a plurality of tiles, each of the tiles containing a  
plurality of the tags.
23. A printer according to claim 22, wherein the tiles interlock with each other to  
substantially cover the surface.
- 25 24. A printer according to claim 23, wherein the tiles are all of a similar shape.

25. A printer according to claim 24, wherein the tiles are triangular, square, rectangular or hexagonal.

5 26. A printer according to claim 22, wherein the tags are disposed stochastically within each of the tiles.

27. A printer according to claim 12, wherein each of the tags includes at least one common feature in addition to the second identity data.

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28. A printer according to claim 27, wherein at least one common feature is configured to assist finding and/or recognition of the tags by associated tag reading apparatus.

15 29. A printer according to claim 27, wherein the at least one common feature is represented in a format incorporating redundancy of information.

30. A printer according to claim 29, wherein the at least one common feature is rotationally symmetric so as to be rotationally invariant.

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31. A printer according to claim 29, wherein the at least one common feature is ring-shaped.

32. A printer according to claim 12, wherein each of the tags includes at least one  
25 orientation feature for enabling a rotational orientation of the tag to be ascertained by associated tag reading apparatus.

33. A printer according to claim 32, wherein the at least one orientation feature is represented in a format incorporating redundancy of information.

34. A printer according to claim 33, wherein the at least one orientation feature is  
5 rotationally asymmetric.

35. A printer according to claim 33, wherein the at least one orientation feature is skewed along its major axis.

10 36. A printer according to claim 12, wherein each of the tags includes at least one perspective feature for enabling a perspective distortion of the tag to be ascertained by associated tag reading apparatus.

37. A printer according to claim 36, wherein the at least one perspective feature  
15 includes at least four sub-features which are not coincident.

38. A printer according to claim 12, wherein each tag includes a plurality of tag elements, the first and second identity data each being defined by a plurality of the elements.

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39. A printer according to claim 38, wherein the tag elements are disposed in one or more arcuate bands around a central region of each tag.

40. A printer according to claim 39, wherein there are a plurality of the arcuate bands  
25 disposed concentrically with respect to each other.

41. A printer according to claim 40, wherein each element takes the form of a dot

having a plurality of possible values.

42. A printer according to claim 41, wherein the number of possible values is two.
- 5 43. A printer according to claim 41, wherein when representing one of the possible values, the tag elements absorb, reflect or fluoresce electromagnetic radiation of a predetermined wavelength or range of wavelengths to a predetermined greater or lesser extent than the second surface.
- 10 44. A printer according to claim 41, wherein the possible values of the tag elements are defined by different relative absorption, reflection or fluorescence of electromagnetic radiation of a predetermined wavelength or range of wavelengths.
- 15 45. A printer according to claim 41, wherein the tags are not substantially visible to an average unaided human eye under daylight or ambient lighting conditions.
46. A printer according to claim 41, wherein the tags are slightly visible to an average unaided human eye under daylight or ambient lighting conditions.
- 20 47. A printer according to claim 38, wherein the tags are visible to an average unaided human eye under daylight or ambient lighting conditions.
48. A printer according to claim 13, wherein the first identity data is represented in a format incorporating redundancy of information.
- 25 49. A printer according to claim 13, wherein the second identity data is represented in a format incorporating redundancy of information.

50. A printer according to claim 49, wherein the printer is an ink printer.
51. A printer according to claim 50, wherein the tags are printed using ink that is  
5 absorbent or reflective in the ultraviolet spectrum or the infrared spectrum.
52. A printer according to claim 51, wherein the printer includes a separate ink channel for printing the tags.
- 10 53. A printer according to claim 50, wherein the printer is configured to print the second coded data and additional information substantially simultaneously onto the second surface.
54. A printer according to claim 53, wherein the additional information is printed  
15 onto the second surface using colored or monochrome inks.
55. A printer according to claim 54, wherein the additional information is printed onto the second surface using one of the following combinations of colored inks:
- CMY;
- 20 CMYK;
- CMYRGB; and
- spot color.
56. A printer according to any one of claims 9 to 11, wherein at least a plurality of  
25 the tags are disposed stochastically upon the second surface.



57. A printer according to any one of claims 9 to 11, wherein the tags are disposed in a regular array on the second surface, in accordance with the coded layout data.

58. A printer according to claim 57, wherein the array is triangular.

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59. A printer according to claim 57, wherein the array is rectangular.

60. A printer according to claim 57, wherein the tags are tiled over the second surface.

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61 ~~63~~. A printer according to claim 62, further including a binding mechanism for binding the pages into a bound document.

62 ~~64~~. A printer according to claim 53, wherein the second surface is defined by a face  
15 of a page, the printer further including dual printing mechanisms for printing opposite faces of the page simultaneously.

63 ~~65~~. A printer according to any one of claims 1 to 3 or 5 to 11, wherein the printing mechanism includes an inkjet printhead for printing ink onto the second surface.

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64 ~~66~~. A printer according to claim ~~65~~<sup>63</sup>, wherein the printhead is a drop on demand inkjet printhead.

65 ~~67~~. A printer according to claim ~~66~~<sup>64</sup>, wherein the printhead is a pagewidth printhead.

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66 ~~68~~. A printer according to claim ~~67~~<sup>65</sup>, wherein the printhead is configured to deliver a plurality of ink colors onto the second surface with one printing pass.

- <sup>67</sup>  
~~69.~~ A printer according to claim <sup>65</sup>~~67~~, wherein the printhead includes electro-thermal bend actuators to eject the ink onto the surface.
- 5 <sup>68</sup>  
~~70.~~ A printer according to any one of claims <sup>67</sup>~~69~~, wherein the printer includes two sets of printheads, configured to print opposite surfaces of a page substantially simultaneously.
- <sup>69</sup>  
~~71.~~ A printer according to claim <sup>67</sup>~~69~~, including a forced filtered air delivery  
10 mechanism for keeping nozzles of the printhead relatively free of paper dust.
- <sup>70</sup>  
~~72.~~ A printer according to claim <sup>67</sup>~~69~~, wherein the printhead includes moving nozzle chambers.
- 15 <sup>71</sup>  
~~73.~~ A printer according to claim <sup>70</sup>~~72~~, wherein the printer includes two sets of printheads, configured to print opposite surfaces of a page substantially simultaneously.
- <sup>72</sup>  
~~74.~~ A printer according to claim 1, wherein the first indicating data includes user identity data, the user identity data being indicative of user data.
- 20 <sup>73</sup>  
~~75.~~ A printer according to claim <sup>72</sup>~~74~~, wherein the user identity data is supplied from storage means associated with the sensing device.
- <sup>74</sup>  
~~76.~~ A printer according to any one of claims 1 to 3, 5 to 11, 15 or 16, wherein the  
25 first interface surface is on the printer.
- <sup>75</sup>  
~~77.~~ A system including:

a printer according to any one of claims 1 to 3, 5 to 11, 15 or 16; and

a sensing device for sensing the first indicating data and transmitting it to the printer.

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78. A system according to claim <sup>75</sup>~~77~~, wherein the sensing device includes a radio  
5 transmitter for transmitting the indicating data to the printer, and the printer includes a  
radio receiver for receiving the indicating data.

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79. A system according to claim <sup>75</sup>~~77~~, wherein the sensing device includes an optical  
sensor for sensing the first coded data.

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79. A system including:  
a printer according to any one of claims 1 to 3, 5 to 11, 15 or 16; and  
a first interface surface disposed on a first surface, the first interface surface including  
first coded data to be sensed by a sensing device, thereby to generate first indicating data  
15 for transmission from the sensing device to the printer.

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80. An interface surface produced by a printer according to any one of claims 1 to 3,  
5 to 11, 15 or 16.

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